Claim Amendments

Claims 2 and 21-32 are cancelled without prejudice or disclaimer of the subject matter contained therein.

Please amend the claims as follows:

1. (Currently amended) A tunable Fabry-Perot filter, comprising:

a pair of opposed, at least partially reflective surfaces defining an optical cavity; and

a metal-oxide matrix having a multiplicity of holes therein in said cavity; ~~and~~

a nano-dispersion of liquid crystals disposed in said holes in said metal-oxide matrix in said matrix cavity.

2. (Cancelled).

3. (Currently amended) The filter according to claim 1, wherein said liquid crystals are disposed in an array of holes in said ~~a~~ metal-oxide matrix.

4. (Currently amended) The filter according to claim 1, wherein said liquid crystals are disposed in an array of holes in said ~~a~~ metal-oxide matrix, the metal-oxide being taken from the group consisting of TiO_2, SiO_2 and ZiO_2.

5. (Original) The filter according to claim 3, wherein said metal-oxide matrix is TiO_2.

6. (Currently amended) The filter according to claim 1, wherein said liquid crystals are disposed in an irregular array of generally spherical holes in said ~~a~~ metal-oxide matrix.

7. (Original) The filter according to claim 6, wherein said holes are on the order of about 10 to 50 nm in diameter.

8. (Original) The filter according to claim 6, wherein said holes make up at least fifty percent of the volume of said matrix.

9. (Original) The filter according to claim 6, wherein said holes make up no more than about sixty-eight percent of the volume of said matrix.

10. (Original) The filter according to claim 6, wherein said holes make up from about fifty percent to about sixty-eighty percent of the volume of said matrix.

11. (Original) The filter according to claim 1, wherein said liquid crystals are in droplet form, said droplets being smaller than the optical wavelengths to be passed through the filter.

12. (Original) The filter according to claim 1, and further comprising means for applying an electric field to said liquid crystals.

13. (Original) The filter according to claim 12, wherein the optical wavelengths which the filter passes are tunable by varying the electric field applied across said optical cavity.

14. (Original) A tunable Fabry-Perot filter, comprising:

a pair of opposed, at least partially reflective, generally parallel surfaces defining a cavity; and

a nano-dispersion of liquid crystals disposed in an array in a metal-oxide matrix in said cavity.

15. (Original) The filter according to claim 14, wherein said liquid crystals are disposed in an array of substantially spherical holes in said metal-oxide matrix.

16. (Original) The filter according to claim 14, wherein said holes are on the order of about 10 to 50 nm in diameter and make up from about fifty percent to about sixty-eighty percent of the volume of said matrix.

17. (Original) The filter according to claim 15, wherein said metal-oxide matrix is formed of metal-oxides taken from the group consisting of TiO_2, SiO_2 and ZiO_2.

18. (Original) The filter according to claim 14, wherein said liquid crystals are in droplet form, said droplets being smaller than the optical wavelengths to be passed through the filter.

19. (Original) The filter according to claim 15, and further comprising means for applying an electric field to said liquid crystals.

20. (Original) The filter according to claim 19, wherein the optical wavelengths which the filter passes are tunable by varying the electric field applied across said cavity containing said liquid crystals.

21 – 32 (Cancelled)

33. (New) The filter according to claim 1, wherein said liquid crystals comprise 50-68 % of the total volume of said metal-oxide matrix in said cavity.

34. (New) A tunable Fabry-Perot filter comprising:

a pair of opposed, at least partially reflective, generally parallel surfaces defining a cavity therebetween;

a metal-oxide matrix having an array of a multiplicity of holes therein in said cavity, said metal-oxide matrix being formed by placing in a mold a mixture of polymer balls and metal-oxide particles, heating the mold to drive off the polymer and fuse the metal-oxide into said matrix defining an array of generally spherical voids: and

a nano-dispersion of liquid crystal material disposed in said array of voids in said metal-oxide matrix in said cavity.